WEATHER, FORECASTS, AND WARNINGS FOR THE MONTH.

By Prof. E. B. GARRIOTT, in charge of Forecast Division.

Temperature was below the February average, except along the immediate middle Atlantic and New England coasts and in the vicinity of Los Angeles, Cal., where it was slightly above the normal. In the Ohio and Mississippi valleys and from the upper Mississippi Valley and western Lake Superior westward over the interior of the north Pacific States the means for the month were 3° to 6° below the normal. Freezing temperature occurred as far south as central Florida, along the Texas and middle Gulf coasts, and throughout California, except on the immediate coast. Over the country generally, from the Rockies to the Atlantic, the period from the 15th to 25th was almost continuously cold.

Precipitation was in excess from the upper Missouri Valley westward over Washington, in eastern upper Michigan, generally in the east Gulf States, and in a belt that extended from Louisiana and eastern Texas northeastward over the Ohio Valley, lower Lakes, Pennsylvania, New York, and New England, the greatest excess, about 6 inches, being noted in the Adirondack region of New York. The most marked deficiency in monthly precipitation occurred in Delaware and eastern Maryland, western North Carolina, southwestern California, and west-central Oregon where the amount was 2 inches or more below the normal. Over a large area that covered the middle and southern Plateau and Rocky Mountain districts and Plains States, the lower Missouri and upper Mississippi valleys, and portions of the upper Lake region, the monthly precipitation was less than one inch.

Heavy snows occurred in the Ohio and middle Mississippi valleys and portions of New York and New England, and on the 16th and 17th the snowfall in portions of the lower Ohio and middle Mississippi valleys was the heaviest noted in Weather Bureau records. Owing to continued cold weather the snow in northern districts accumulated to unusual depths and a large area was covered by snow throughout the month. A change to warmer weather at the close of February, with rain in the eastern districts, caused a rapid melting of the snow and a rapid rise in streams in the Ohio Valley, lower Lake region, Pennsylvania, and New York during the early days of March.

February opened with a barometric depression over the Plains States and middle and southern Rocky Mountain and Plateau districts and an area of high barometer over the middle and northern Pacific States. Moving eastward the depression reached the Atlantic coast on the 3d attended by general precipitation from the Mississippi eastward and followed by a decided fall in temperature. In northern New York and parts of New England heavy snow fell. On Sunday, the 6th, the following special forecast was issued:

The week beginning Monday, February 7, will open with temperature considerably below the average for the season over the eastern portion of the United States and freezing weather in the Gulf States and Florida. Following the cold period in the East temperature will rise slowly during the next several days. A disturbance from the middle west and northwest that will reach the Atlantic coast about Thursday will be attended by precipitation from the Mississippi Valley eastward that in more northern States will be in the form of snow, and will be followed by a change to colder.

The center of the disturbance referred to reached the Atlantic coast Thursday morning. Its advance from the Rockies was attended by rain in the Southern and Middle States east of the Mississippi and by snow from the Lake region over New York and New England. It was followed by a marked fall in temperature and by freezing weather as far south as the middle Gulf coast. In portions of northern New York and northern New England temperatures were below zero on the morning of the 11th, with a reported minimum of −26° at Canton, N. Y.

A disturbance that developed in the Rio Grande Valley on the 10th moved eastward to Alabama by the morning of the 11th attended by heavy rain in the Gulf States and by snow in Tennessee, western North Carolina, northern Mississippi, and eastern Arkansas. Storm warnings were ordered for Gulf ports the evening of the 10th and the morning of the 11th the warnings were extended along the Atlantic coast from Florida to Massachusetts. Warnings of heavy snow were issued for the Middle Atlantic and New England States and the mountain districts of North Carolina, West Virginia, eastern Tennessee, and western Pennsylvania, and cold wave warnings were ordered for northern Florida. Moving northeastward to the vicinity of New York City by the morning of the 12th the storm was attended by gales along the Atlantic coast and by heavy snow from North Carolina and eastern Tennessee over the upper Ohio Valley, lower Lakes, and the Middle Atlantic and New England States. During the succeeding 24 hours the center of disturbance passed over the Canadian Maritime Provinces. On Sunday, February 13, the following special forecast was issued:

During the present week a general storm, followed by a cold wave, will cross the United States. The center of this storm will appear over the Pacific States within the next 2 days, cross the Rockies, Plains States, and central valleys during the middle days of the week and reach the Atlantic seaboard by Friday. The cold wave promises to be rather severe. It will overspread the north Pacific States by Tuesday morning, the middle and northern plateau and Rocky Mountain districts by Wednesday morning, the middle and northern plateau and central valleys by Thursday, and reach the Atlantic seaboard by Friday or Friday night.

The extraordinary depth of snow on the ground in parts of the Lake region and in the mountain districts of the Middle Atlantic and New England States will, in the event of warm heavy rains in the near future, present conditions favorable for freshets and floods in the streams of those regions. The outlook for the present is, however, that a tendency toward flood conditions in the larger streams about the middle of the week will be checked by cold weather that will arrive later in the week.

The storm referred to appeared over the north Pacific States on the 14th and moved thence southeastward to the west Gulf States where it recurved eastward and northeastward and passed to the New England coast by Friday morning, the 18th. The storm was attended by heavy snow from the middle Mississippi Valley over the Ohio Valley and lower Lakes, by rain or snow in the Atlantic and west Gulf States, and rains and thunderstorms in the east Gulf and South Atlantic States. Its passage over the Gulf and Atlantic States was attended by gales of unusual strength. The storm was followed by a cold wave that carried the line of freezing temperature to the Gulf coast.

From the 17th to 21st severe storms prevailed over the British Isles. Approximately 100 persons were drowned on the coast and damage on land aggregated hundreds of thousands of dollars. On the 19th the barometer at Valentia, Ireland, fell to a reported reading of 28.36 inches.

The following editorial regarding the American cold wave is from the Oklahoman, Oklahoma, Okla., of February 17:

The remarkable accuracy with which the blizzard that is now traveling across the country was predicted days in advance of its advent is deserving of most favorable comment. Sunday's newspapers throughout the United States carried a warning from the Weather Bureau to the effect that a storm was approaching the Pacific coast that would traverse the entire continent and reach the Atlantic coast by Friday.

In Oklahoma marked derangement of atmospheric conditions were noticeable Monday night. The following day there was the inevitable warmth always observable when warm air is being condensed as it is driven ahead of the cold blasts of an approaching blizzard. Late Tuesday evening there came a sudden drop in temperature, accompanied by high winds. By Wednesday morning the mercury had dropped to 10° above and the boreal blasts were carrying considerable snow.

Thus the story of a prediction and its fulfillment. The advance warning should have been of incalculable benefit to live-stock men and to shippers and to others engaged in avocations which are affected by meteorological conditions.

On February 20 the following special bulletin was issued:

The storm and severe cold wave of the past week crossed the country, as indicated in the bulletin of February 13, the center of the storm reaching the Atlantic coast Friday morning and the cold wave extending with diminished intensity over the Atlantic States Friday and Friday night. The snow attending the storm added materially to the heavy snow deposit in portions of the Ohio Valley, Lake region, and North Atlantic States.

During Monday and Tuesday a storm area will cross the central valleys Great Lakes, and Atlantic seaboard, attended by heavy snow in the upper Lake region and interior of New York and New England, by rain or snow in the middle districts, and rain in the South. Following the storm a cold wave, with clearing and fair weather, will overspread the Mississippi Valley and upper Lakes Monday, and with diminishing intensity will reach the Atlantic States Tuesday and Tuesday night. The second storm of the week, that will in turn be followed by a cold wave, will appear over the extreme West about Tuesday, cross the Plains States and central valleys Wednesday and Thursday, and reach the Atlantic coast by Friday.

By Tuesday morning the storm referred to had advanced from the central valleys over the Middle Atlantic States, attended by snow from the upper Mississippi Valley eastward, rain and snow in the Ohio Valley, and rain in the South. During this period a severe cold wave overspread the Missouri and upper Mississippi valleys, from which regions it advanced southward to the Gulf States and eastward with diminishing intensity to the Atlantic coast. A disturbance that appeared over the middle and north Pacific States Tuesday failed to attain marked strength after advancing eastward, and the development and appearance of the second important storm of the week was nearly 2 days later than anticipated. This storm appeared in the extreme northwest Thursday, advanced over the Plains States Friday, the central valleys and Lake region Saturday, and drifted thence slowly over the Atlantic States. The week ending with the 26th closed with exceptionally high barometric pressure over the Atlantic Ocean, rapidly diminishing pressure over Bering Sea and Alaska, and increasing pressure over the Hawaiian Islands. Pressure changes of this character that occur in the colder months indicate a period of unseasonably warm weather for sections of the United States east of the Rocky Mountains.

Average temperatures and departures from the normal.

Districts.	Number of stations.	Average temperatures for the current month.	Departures for the current month.	Accumulated departures since January 1.	Average departures since January 1.
		°	°	°	°
New England	12	25.4	− 0.2	+ 3.8	+ 1.9
Middle Atlantic	15	32.2	− 0.4	+ 0.9	+ 0.4
South Atlantic	10	46.0	− 1.8	− 1.2	− 0.6
Florida Peninsula*	8	60.8	− 1.2	− 0.1	0.0
East Gulf	11	47.9	− 2.9	− 1.6	− 0.8
West Gulf	10	45.2	− 4.0	− 0.5	− 0.2
Ohio Valley and Tennessee	13	32.9	− 3.3	− 2.7	− 1.4
Lower Lakes	10	22.2	− 2.3	− 1.0	− 0.5
Upper Lakes	12	16.8	− 2.2	− 0.1	0.0
North Dakota*	9	3.0	− 3.6	− 0.1	0.0
Upper Mississippi Valley	14	21.4	− 3.2	− 2.0	− 1.0
Missouri Valley	12	21.9	− 2.5	0.0	0.0
Northern slope	9	17.3	− 4.3	− 2.4	− 1.2
Middle slope	6	30.8	− 1.6	+ 1.5	+ 6.8
Southern slope*	8	40.3	− 2.1	+ 0.7	+ 0.4
Southern Plateau*	11	42.8	− 1.1	0.0	0.0
Middle Plateau*	10	26.2	− 3.1	− 6.7	− 3.4
Northern Plateau*	9	25.7	− 3.1	− 5.4	− 2.7
North Pacific	7	39.1	− 1.6	− 2.6	− 1.3
Middle Pacific	5	47.9	− 1.7	− 4.7	− 2.4
South Pacific	4	52.5	0.0	− 1.0	− 0.5

*Regular Weather Bureau and selected cooperative stations.

Average precipitation and departures from the normal.

Districts.	Number of stations.	Average.		Departure.	
		Current month.	Percentage of normal.	Current month.	Accumulated since Jan. 1.
		Inches.		*Inches.*	*Inches.*
New England	11	4.04	125	+ 0.8	+ 2.0
Middle Atlantic	15	2.69	87	− 0.4	+ 0.3
South Atlantic	11	3.58	95	− 0.2	− 1.7
Florida Peninsula*	8	2.88	97	− 0.1	− 1.9
East Gulf	11	5.36	113	+ 0.6	− 1.2
West Gulf	10	2.63	96	− 0.1	− 1.7
Ohio Valley and Tennessee	13	4.11	114	+ 0.5	+ 2.5
Lower Lakes	10	3.61	150	+ 1.2	+ 2.2
Upper Lakes	12	1.34	77	− 0.4	− 0.6
North Dakota*	9	0.39	66	− 0.2	− 0.5
Upper Mississippi Valley	15	1.03	60	− 0.7	− 0.5
Missouri Valley	12	0.62	61	− 0.4	0.0
Northern slope	9	0.75	100	0.0	+ 0.1
Middle slope	6	0.40	57	− 0.3	− 0.5
Southern slope*	8	0.27	25	− 0.8	− 1.5
Southern Plateau*	11	0.16	15	− 0.9	− 1.1
Middle Plateau*	11	0.58	33	− 1.2	− 1.4
Northern Plateau*	9	1.48	100	0.0	− 0.4
North Pacific	7	5.57	102	+ 0.1	+ 0.8
Middle Pacific	7	2.71	69	− 1.3	− 2.4
South Pacific	4	0.24	10	− 2.2	− 2.9

*Regular Weather Bureau and selected cooperative stations.

Average relative humidity and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	76	+ 1	Missouri Valley	76	+ 1
Middle Atlantic	72	− 2	Northern slope	75	+ 4
South Atlantic	74	− 2	Middle slope	67	0
Florida Peninsula	81	+ 1	Southern slope	58	−10
East Gulf	74	− 2	Southern Plateau	48	+ 4
West Gulf	72	− 2	Middle Plateau	70	+ 6
Ohio Valley and Tennessee	73	− 1	Northern Plateau	76	+ 1
Lower Lakes	79	− 1	North Pacific	84	+ 3
Upper Lakes	79	− 3	Middle Pacific	75	− 1
North Dakota	90	+10	South Pacific	66	− 3
Upper Mississippi Valley	77	0			

Average cloudiness and departures from the normal.

Districts.	Average.	Departure from the normal.	Districts.	Average.	Departure from the normal.
New England	5.9	+ 0.6	Missouri Valley	4.4	− 0.8
Middle Atlantic	5.3	− 0.2	Northern slope	5.0	+ 0.1
South Atlantic	5.4	+ 0.1	Middle slope	4.4	0.0
Florida Peninsula	4.8	+ 0.5	Southern slope	4.0	− 0.8
East Gulf	5.8	+ 0.2	Southern Plateau	2.7	− 0.9
West Gulf	5.4	− 0.2	Middle Plateau	5.3	+ 0.2
Ohio Valley and Tennessee	6.0	− 0.2	Northern Plateau	7.4	+ 1.2
Lower Lakes	6.9	+ 0.1	North Pacific	7.7	+ 0.6
Upper Lakes	6.0	− 0.3	Middle Pacific	5.8	+ 0.2
North Dakota	4.7	− 0.3	South Pacific	4.5	+ 0.2
Upper Mississippi Valley	5.2	0.0			

Maximum wind velocities.

Stations.	Date.	Velocity.	Direction.	Stations.	Date.	Velocity.	Direction.
Block Island, R. I.	12	58	ne.	North Head, Wash.	12	56	s.
Do.	18	67	s.	Do.	14	54	nw.
Buffalo, N. Y.	23	56	w.	Do.	24	58	sw.
Burlington, Vt.	26	56	s.	Do.	26	61	s.
Do.	27	52	s.	Do.	27	73	s.
Cape Henry, Va.	1	50	n.	Do.	28	50	s.
Do.	4	50	nw.	Oklahoma, Okla.	16	54	n.
Cheyenne, Wyo.	15	50	nw.	Pensacola, Fla.	17	60	s.
Duluth, Minn.	15	51	ne.	Do.	21	54	sw.
Eastport, Me.	12	60	nw.	Do.	26	54	e.
El Paso, Tex.	16	57	ne.	Point Reyes Light, Cal.	1	78	nw.
Hatteras, N. C.	1	50	nw.	Do.	6	62	s.
Do.	24	60	ne.	Do.	14	60	nw.
Do.	25	52	n.	Do.	22	56	s.
Independence, Cal.	14	66	w.	Do.	26	54	nw.
Mount Tamalpais, Cal.	1	70	nw.	Salt Lake City, Utah.	14	52	nw.
Do.	2	54	ne.	Sioux City, Iowa.	15	60	nw.
Do.	7	50	sw.	Southeast Farallon, Cal.	1	68	n.
Do.	13	52	sw.	Do.	14	50	n.
Do.	14	70	nw.	Syracuse, N. Y.	20	54	s.
Do.	18	53	sw.	Do.	27	50	s.
Do.	19	54	w.	Tatoosh Island, Wash.	12	59	s.
Mount Weather, Va.	3	56	nw.	Do.	21	57	e.
Do.	6	56	nw.	Do.	22	53	e.
Do.	7	51	nw.	Do.	24	56	sw.
Do.	18	76	nw.	Do.	26	59	s.
Do.	22	61	nw.	Do.	27	56	sw.
Nantucket, Mass.	1	52	ne.	Tonopah, Nev.	14	52	w.
Do.	12	53	sw.	Williston, N. Dak.	28	52	w.